

Sixth Embodiment

A sixth embodiment of the present invention will now be described.

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The components of the sixth embodiment and the processing operations performed by the components are the same as those in the second embodiment, with the exception that, after the 3D computer model of the subject object has been generated at step S4-38, the 3D computer model is re-positioned relative to the default viewing camera so that the viewing axis of the default viewing camera more accurately intersects the approximate centre of the 3D computer model.

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More particularly, in the sixth embodiment, after the 3D computer model has been generated at step S4-38, processing is performed in the same way as in the first embodiment to define a bounding box around the polygons making up the 3D computer model and then to define a bounding sphere around the bounding box.

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The 3D computer model is then moved so that the viewing axis of the default viewing camera intersects the centre of the bounding sphere.

Consequently, by moving the 3D computer model in dependence upon its extents in the x, y and z direction, the 3D computer model can be more accurately positioned at the centre of the field view of the default viewing camera.

In all of the embodiments described above, the first image of the 3D computer model of the subject object displayed at the third party apparatus comprises image data generated by rendering the 3D computer model with a virtual viewing camera.

However, the first image displayed at the third party apparatus may comprise an image recorded by the user at customer processing apparatus 2, 4 using camera 16.

This will be explained in more detail below in the seventh and eighth embodiments.

Seventh Embodiment

A seventh embodiment of the present invention will now be described.

The components of the seventh embodiment and the

processing operations performed by the components are the same as those in any of the embodiments described above, with the exception of the processing performed at step S4-40 and step S4-42 (or step S4-42 alone in the case of
5 embodiments in which step S4-40 is not performed).

More particularly, in the seventh embodiment, the processing at steps S4-40 and S4-42 is replaced by the processing steps shown in Figure 11.

Referring to Figure 11, at step S11-2, processing apparatus 6 considers the next input image previously received from customer processing apparatus 2, 4 and stored at step S4-34 for which the camera imaging
10 position and orientation was calculated at step S4-36.

Referring to Figure 12a, because the recording position and orientation of each input image received from customer processing apparatus 2, 4 has been calculated
15 by processing apparatus 6 at step S4-36, the camera viewing axis 500 for each input image is defined relative to the calibration pattern and 3D computer model in the coordinate system in which the calibration pattern and
20 3D computer model are defined.